WETLAND BIOMONITORING IN RI

http://www.state.ri.us/dem/programs/benviron/water/wetlands/marshes.htm

Date: July 29, 2004
Time: 10:00 – 11:30 am
Place: DEM Office of Water Resources
235 Promenade St. Providence
Room 280

Purpose: To solicit input from professionals studying, protecting and managing wetlands to identify specific wetland monitoring needs for RI and ensure that data are useful to wetland regulatory and non-regulatory decision-makers.

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Agenda:

- Introduction and background
  - Context of the project relative to EPA priorities and water monitoring in the state
  - What is wetland biomonitoring and why do it?
  - EPA recommendations for a 3-tiered approach to monitoring
- Examples from other states including a brief overview of methods
- RI Approach –where we are now, and where we're going
- Possible uses for data – review our working list, add new ideas, prioritize data needs for RI

Goal of meeting is to come up with a list of prioritized needs for wetland monitoring in RI.

Your ideas and opinions will help shape this plan.

Questions for you:

1. What do you think are the data needs for freshwater wetland monitoring in RI?
2. What information about wetland ecological condition might help you do your job better and help us all improve wetland protection and management?

Bioassessment Basics

Bioassessments are based on the premise that the community of plants and animals living in a wetland will reflect the biological integrity or "health" of a wetland. For example, in a damaged wetland, species diversity decreases and species composition changes, with an increase in "tolerant" species and a decrease in "intolerant" species. The biological communities reflect cumulative impacts to a wetland over time and provide more information about the quality of the wetland than chemical or physical data alone.

Why Monitor Wetlands?

The main goal of the Clean Water Act is to "maintain and restore the chemical, physical, and biological integrity of the Nation's Waters," including wetlands, which are waters of the state.

Currently, most states report on status and trends in wetland acreage – i.e., losses and gains. EPA is encouraging states to move beyond assessing quantity of wetlands to assessing quality, i.e. biological integrity or ecological health, of wetlands to meet the goals of the CWA.

Sue Kiernan of the RI DEM Office of Water Resources is working with others to develop a Comprehensive Water Monitoring Strategy for RI, which is near completion. The wetlands plan
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we are working on will eventually be part of this comprehensive strategy to monitor and assess all waters of the state.

The photos below illustrate the importance of going beyond measuring acreage to assessing ecological condition of wetlands. The wetland on the right is obviously damaged by human activity. The one on the left looks healthier, but some human activities can damage a wetland without leaving visible signs.

photos from:
http://www.epa.gov/owow/wetlands/bawwg/biobasic.html

Through the development and use of biological monitoring and assessment methods, we can describe, with certainty, how ecologically 'healthy' our wetlands are.

"The link between function and condition lies in the assumption that ecological integrity is an integrating "super-function" of wetlands. If condition is excellent (i.e. equal to reference condition), then the functions of that wetland type will also occur at reference levels." (Fennesy et al., 2004)

The 3-Tiered Approach (tiers also called 'levels'):

EPA is advocating a 3-tiered technical approach to monitoring wetlands;

Tier or Level
Level 1 – Landscape Assessment: Evaluate indicators for a landscape view of a watershed and wetland condition
Level 2 – Rapid Wetland Assessment: Evaluate the general condition of individual wetlands using relatively simple indicators. These assessments are based on identification of stressors (i.e. road crossings, tile drainage, ditching).
Level 3 – Intensive Site Assessment Designed to provide quantitative data on wetland condition within an assessment area, used to refine rapid wetland assessment methods and diagnose the causes of wetland degradation.

Resolution of information increases from level 1 to level 3, as do cost and level of effort.

Level 3 is used to validate level 2. Levels 3 and 2 validate level 1.

Why Monitor Wetlands in Rhode Island?

Here are some ideas we've heard thus far about possible management needs/applications of wetland monitoring data in RI (in no particular order):

- baseline monitoring for long-term trends and decision making
- basic "screening" to ID problems & define reference sites
- monitor compliance for mitigation wetlands, including creation and restoration
- eventual development and support of water quality standards for wetlands
- understand emerging issues that can cause economic impacts (ex. invasive spp)
- diagnose the type of human stress impairing a wetland
- assess cumulative impacts to wetlands by monitoring biological communities
- monitor and assess the impacts to wetlands due to loss of protective buffers
- monitor and assess impacts due to water withdrawals (community wells, agriculture, golf courses)
- prioritize wetlands for open space protection
- use data to help w/"predictability" of permit application, support permitting decisions
- monitor impacts of recreation projects to wetlands
- assess impacts of sedimentation from highways to wetland biological communities
- assess impacts from salt application on roads to wetland vegetation and biota
- quantify and assess effects of land use changes from rural to residential on adjacent and "downstream" wetlands
- determine impacts to wetlands resulting from loss of groundwater recharge
- assess impacts of storm water runoff to wetland communities
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What additional data needs can you suggest?

What are the priorities for RI?

A Few On-line References for Wetland Biomonitoring:

- EPA website for the Biological Assessment of Wetlands Workgroup, now the National Wetlands Monitoring Group:: http://www.epa.gov/owow/wetlands/bawwg/

- EPA website for the New England Biological Assessment of Wetlands Workgroup (BAWWG): http://www.epa.gov/region01/eco/wetland/

- Wetland Bioassessment Fact Sheets: http://www.epa.gov/owow/wetlands/wqual/bio_fact/

- Methods for evaluating wetland condition (referred to as the EPA method “modules”): http://www.epa.gov/waterscience/criteria/wetlands/